

CLAIMS

What is claimed is:

1 1. A laser diode/electro-absorption-modulator (LD/EAM)
2 driver comprising:

3 a cascoded output switch having a pair of output devices
4 and a pair of cascode devices;

5 a resistor providing tail current to the output devices;

6 a predriver circuit receiving an input signal and
7 controlling the output devices;

8 a feedback circuit coupled to the resistor to control
9 the modulation current of the output devices by control of
10 bias on the predriver circuit; and,

11 a common mode feedback circuit providing modulation
12 dependent currents for the predriver.

1 2. The LD/EAM driver of claim 1 further comprised of a
2 output bias circuit providing for on-chip summation of the
3 modulation and output bias current at a low impedance node of
4 the active cascode device.

1 3. The LD/EAM driver of claim 1 further comprised of a
2 cascode bias circuit coupled to bias the cascode devices to a
3 bias voltage responsive to the power supply voltage, the
4 output bias current and the modulation current.

1 4. The LD/EAM driver of claim 3 further comprised of a
2 PTAT bandgap reference circuit to generate biasing currents
3 with positive temperature coefficients for the predriver gain
4 stages.

1 5. The LD/EAM driver of claim 4 wherein the modulation
2 current is externally adjustable.

1 6. The LD/EAM driver of claim 1 wherein the modulation
2 current is externally adjustable.

1 7. The LD/EAM driver of claim 1 wherein the LD/EAM
2 driver is an integrated circuit and the predriver bias
3 current control and the modulation current are externally
4 adjustable.

1 8. The LD/EAM driver of claim 1 wherein the LD/EAM
2 driver is an integrated circuit and the predriver bias
3 current control and the modulation current are externally
4 adjustable by a single external adjustment.

1 9. The LD/EAM driver of claim 1 wherein the LD/EAM
2 driver is an integrated circuit and the predriver bias
3 current control and the modulation current are independently
4 externally adjustable.

1 10. The LD/EAM driver of claim 1 further comprised of a
2 pulldown variance circuit coupled to the predriver, the
3 pulldown variance circuit causing a turnoff current of the
4 predriver to be larger than a turn-on current of the
5 predriver.

1 11. The LD/EAM driver of claim 10 further comprised of
2 a PTAT bandgap reference circuit to generate biasing currents
3 with positive temperature coefficients for the predriver gain
4 stages.

1 12. The LD/EAM driver of claim 11 wherein the pulldown
2 variance circuit is responsive to the output of the bandgap
3 reference.

1 13. A laser diode/electro-absorption-modulator (LD/EAM)
2 driver comprising:
3 a cascoded output switch having a pair of output devices
4 and a pair of cascode devices;
5 a resistor providing tail current to the output devices;
6 a predriver circuit receiving an input signal and
7 controlling the output devices;
8 a feedback circuit coupled to the resistor to control
9 the modulation current of the output devices by control of
10 bias on the predriver circuit;

11 a common mode feedback circuit providing modulation
12 dependent currents for the predriver; and,
13 a cascode bias circuit coupled to bias the cascode
14 devices to a bias voltage responsive to the power supply
15 voltage, the output bias current and the modulation current.

1 14. The LD/EAM driver of claim 13 further comprised of
2 a PTAT bandgap reference circuit to generate biasing currents
3 with positive temperature coefficients for the predriver gain
4 stages.

1 15. The LD/EAM driver of claim 14 wherein the
2 modulation current is externally adjustable.

1 16. The LD/EAM driver of claim 13 wherein the LD/EAM
2 driver is an integrated circuit and the predriver bias
3 current control and the modulation current are externally
4 adjustable.

1 17. The LD/EAM driver of claim 13 wherein the LD/EAM
2 driver is an integrated circuit and the predriver bias
3 current control and the modulation current are externally
4 adjustable by a single external adjustment.

1 18. The LD/EAM driver of claim 13 wherein the LD/EAM
2 driver is an integrated circuit and the predriver bias

current control and the modulation current are independently externally adjustable.

19. The LD/EAM driver of claim 13 further comprised of a pulldown variance circuit coupled to the predriver, the pulldown variance circuit causing a turnoff current of the predriver to be larger than a turn-on current of the predriver.

20. The LD/EAM driver of claim 19 further comprised of a PTAT bandgap reference circuit to generate biasing currents with positive temperature coefficients for the predriver gain stages.

21. The LD/EAM driver of claim 20 wherein the pulldown variance circuit is responsive to the output of the bandgap reference.

22. A laser diode/electro-absorption-modulator (LD/EAM) driver comprising:

a cascoded output switch having a pair of output devices and a pair of cascode devices;

a resistor providing tail current to the output devices;

a predriver circuit receiving an input signal and controlling the output devices;

8 a feedback circuit coupled to the resistor to control
9 the modulation current of the output devices by control of
10 bias on the predriver circuit;
11 a common mode feedback circuit providing modulation
12 dependent currents for the predriver;
13 a cascode bias circuit coupled to bias the cascode
14 devices to a bias voltage responsive to the power supply
15 voltage, the output bias current and the modulation current;
16 a PTAT bandgap reference circuit to generate biasing
17 currents with positive temperature coefficients for the
18 predriver gain stages; and,
19 a pulldown variance circuit coupled to the predriver,
20 the pulldown variance circuit causing a turnoff current of
21 the predriver to be larger than a turn-on current of the
22 predriver.

1 23. The LD/EAM driver of claim 22 wherein the
2 modulation current is externally adjustable.

1 24. The LD/EAM driver of claim 22 wherein the LD/EAM
2 driver is an integrated circuit and the predriver bias
3 current control and the modulation current are externally
4 adjustable.

1 25. The LD/EAM driver of claim 22 wherein the LD/EAM
2 driver is an integrated circuit and the predriver bias

current control and the modulation current are externally adjustable by a single external adjustment.

26. The LD/EAM driver of claim 22 wherein the LD/EAM driver is an integrated circuit and the predriver bias current control and the modulation current are independently externally adjustable.

27. The LD/EAM driver of claim 26 further comprised of a PTAT bandgap reference circuit to generate biasing currents with positive temperature coefficients for the predriver gain stages.

28. The LD/EAM driver of claim 27 wherein the pulldown variance circuit is responsive to the output of the bandgap reference.